



SJC&S Middle School

Summer
Math
Packet

Entering 8th Grade

Name: _____

Math 7 Review: Packet #1

Topic #1: Integers and Absolute Value

Directions: Find each sum, difference, product, or quotient.

1. $-18 + 34$

2. $14 - |23|$

3. $-7 + (-12)$

4. $-6 \times |-4|$

5. $\frac{-36}{3}$

6. $-3 \cdot |-25|$

7. After a blizzard the amount of snow on the ground melted by 3 inches one day and then another 8 inches the next day. Write an expression that represents the total change in the amount of snow on the ground over the two days.

8. A scuba diver descended at a rate of 8 feet per second for one minute. What was her total change in elevation over that period of time?

9. A gopher dug a burrow 6 feet below ground. He came up 2 feet to find food, then dug back down another 8 feet. How many feet below ground is he?

Topic #2: Fraction Operations

10. $-\frac{11}{12} + \frac{2}{3}$

11. $3\frac{1}{2} + 4\frac{2}{5}$

12. $6\frac{3}{8} - 2\frac{5}{6}$

13. $-\frac{5}{3} \times 1\frac{1}{4}$

14. $-5\frac{3}{5} \cdot -\frac{1}{7}$

15. $\frac{32}{9} \div 4$

16. Scott filled his gas tank up with $19\frac{5}{9}$ gallons of gas. If he uses $1\frac{5}{6}$ gallons of gas each day, after how many days will he need to refill his tank?

17. Mia has $4\frac{1}{5}$ inches of red yarn and $2\frac{3}{4}$ inches of blue yarn. How many inches of yarn does she have?

Topic #3: Exponents, Roots and Scientific Notation

Directions: Complete the chart below.

	Expanded Notation	Exponential Expression	Value
18.	$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$		
19.	$4 \cdot 4 \cdot 4 \cdot 4$		
20.	$(-6) \cdot (-6) \cdot (-6)$		
21.	$\frac{3}{5} \cdot \frac{3}{5} \cdot \frac{3}{5}$		

Directions: Find each square root.

22. $\sqrt{64}$	23. $\sqrt{256}$	24. $\sqrt{625}$
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Directions: Estimate each square root to the nearest tenth.

25. $\sqrt{450}$	26. $\sqrt{50}$	27. $\sqrt{120}$
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28. Between which two consecutive numbers does the square root of 90 lie?	29. Hannah has a small square shaped garden with an area of 196 square feet. If she wants to put a fence around the garden, how many feet of fencing will she need?
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Directions: Write each number in standard form.

30. 9×10^5	31. 1.4×10^{-3}	32. 2.45×10^6
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Directions: Write each number in scientific notation.

33. 0.000412	34. 74,500,000,000	35. 12
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Topic #4: Fraction, Decimal, and Percent Conversions

Directions: Complete the chart below.

	Fraction	Decimal	Percent
36.	$\frac{11}{50}$		
37.			14%
38.		0.8	
39.	$\frac{24}{20}$		

Directions: Evaluate each expression. Give your answer as a fraction in simplest form.

40. $\frac{5}{6} \times 0.42$	41. $-2.8 - \left(-6\frac{5}{8}\right)$	42. $\left(1.75 - \frac{4}{5}\right) \cdot \frac{2}{3}$
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Directions: Evaluate each expression. Give your answer as a decimal.

43. $-\frac{3}{4} \cdot 0.16$	44. $0.76 \div \frac{1}{4}$	45. $-2\frac{1}{2} - 0.78$
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46. Jorge has one dog who weighs $51\frac{1}{5}$ pounds and another dog who weighs 18.3 pounds. How much heavier is the first dog?

Topic #5: Comparing & Ordering Numbers

Directions: Place a $<$, $>$, or $=$ in the circle to complete each statement.

47. 2.1×10^2 ○ 5^2	48. $\sqrt{144}$ ○ $\frac{108}{12}$	49. 40% ○ 4.5×10^1
50. 1.2×10^3 ○ 9.8×10^2	51. 6^3 ○ 2.2×10^3	52. $\sqrt{150}$ ○ $\frac{60}{5}$

53. Rewrite the list of numbers in order from **least to greatest**: $\{8^3, 5.5 \times 10^2, \sqrt{500}, 7^4, 8.6 \times 10^1\}$

54. Rewrite the list of numbers in order from **greatest to least**: $\left\{\frac{5}{6}, 0.56, \frac{7}{10}, 58\%, 5.06 \times 10^0\right\}$

Topic #6: Order of Operations

Directions: Simplify.

55. $5^2 + 80 \div (2^3) \times 5$

56. $-14 + \frac{(2^3 \times 6)}{4}$

57. $\frac{(-6)^2 + 32 \div 2^4}{\sqrt{4}}$

Topic #7: Properties

Commutative Property Order doesn't matter when adding or multiplying	Inverse Property Use opposites to cancel out the original number
Associative Property Grouping doesn't matter when adding or multiplying	Property of Zero A number multiplied by zero is always zero.
Identity Property Keeps the value of the original number.	Distributive Property Multiply a value to an expression in parentheses.
Directions: Name the property that justifies each statement.	
58. $-5(4x + 5) = -20x - 25$	59. $x^2 \cdot (y^2 \cdot z^2) = (y^2 \cdot z^2) \cdot x^2$
60. $6 + (7 + 9) = (6 + 7) + 9$	61. $-m^3 + 0 = -m^3$
62. What is the multiplicative inverse of -45?	63. What is the additive identity of 16?
64. What is the additive inverse of 6?	65. What is the multiplicative identity of $\frac{1}{2}$?

Name: _____

Math 7 Review: Packet #3

Topic #1: Ratios and Rates

Use for questions 1-3: A zoo has 6 tigers, 8 lions and 16 cheetahs in the big cat exhibit. Find each ratio and give your answer in simplest form.

1. tigers to cheetahs	2. cheetahs to lions	3. lions to the total number of animals in the exhibit
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Find each unit rate. Round to the nearest tenth or cent when necessary.

4. Wesley worked for 32 hours last week and earned a total of \$409.60. How much does he make per hour?	5. The Morris family drove 368.5 miles in 5.5 hours. Find their average rate of speed.
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Topic #2: Proportional Relationships

Solve the following proportions.

6. $\frac{b}{10} = \frac{5}{8}$	7. $\frac{5}{2} = \frac{8}{n}$	8. $\frac{6}{5} = \frac{x}{7}$
9. Travis spent \$9.84 on 8 pounds of watermelon. How much would he spend on 15 pounds of watermelon?	10. A bag of grass seed weighs 7 pounds and covers 2,800 square feet. If Mark's backyard is 6,000 square feet, how many pounds of grass seed will he need?	
11. Deanna is making cookies. She needs $2\frac{1}{6}$ cups of sugar to make 3 dozen cookies. If she has 8 dozen cookies to make, how many cups of sugar will she need?	12. Anna enlarged a photo to hang over her fireplace. The new photo is 47.2 inches wide. If the original photo was 3.6 inches tall and 5.9 inches wide, what is the height of the new photo?	

Topic #5: Percents

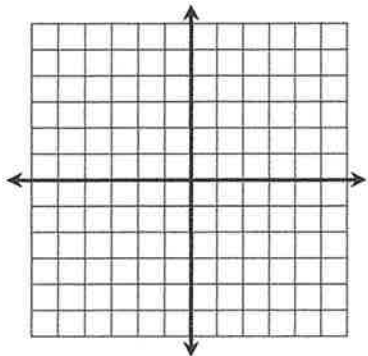
Round to the nearest hundredth if necessary.		
23. Find 4% of 725	24. 14 is what percent of 70?	25. 28 is 35% of what number?
26. Of the total students at Martin Middle School, 224 students are picked up by their parent at dismissal. If this is 28% of the total number of students, how many students are at Martin Middle School altogether?	27. On Monday, Kacie completed 40% of the total miles she wanted to run for the week. If she wanted to run 20 miles during the week, how many miles did she run on Monday?	
28. Theater tickets are marked down 15%. How much are the tickets if they originally cost \$55?	29. Andrew has a coupon for 30% off his purchase at an electronics store. If he buys a \$199 television, how much does he pay?	
30. A new robotic toy was selling for \$24 before it became very popular. The store raised the price by 25%. What was the cost of the toy after the markup?	31. Manny buys a new grill that costs \$375. The grill is discounted 22% and sales tax is 6.5%. How much does Manny pay for the grill?	
32. Pam bought a pair of shoes on sale for \$22.40. If this was 20% off the original price, find the original price of the shoes.	33. Shelly buys a dining room table that costs \$950. The store has discounted the table 30%. She has a 25% off coupon to use after the store discount. How much does Shelly pay for the table?	

Name: _____

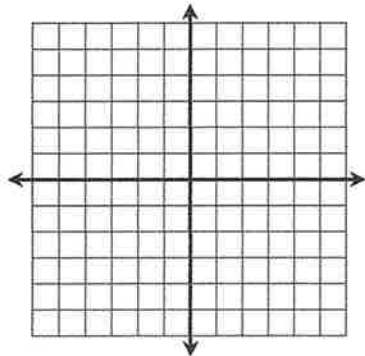
Topic #1: Graphing Relations

Graph each relation.

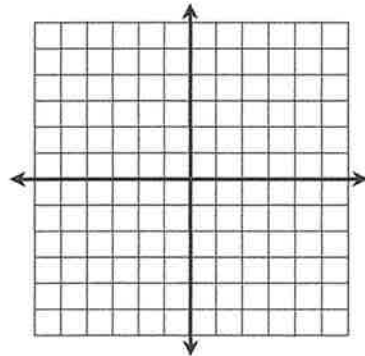
1. $\{(-4, -2), (5, 1), (0, -3), (-3, 0)\}$



2. $\{(-1, -4), (0, -2), (1, 0), (2, 2)\}$



3. $\{(-3, 5), (6, 2), (-2, -5), (1, -1)\}$



Complete each function table.

4. $y = -2x + 4$

x	y	(x, y)
-6		
-2		
4		
8		

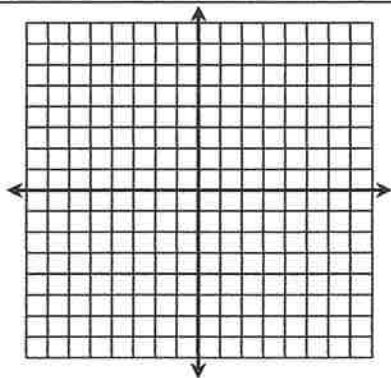
5. $y = -\frac{5}{2}x$

x	y	(x, y)
-4		
-2		
2		
4		

Use the table to graph each function.

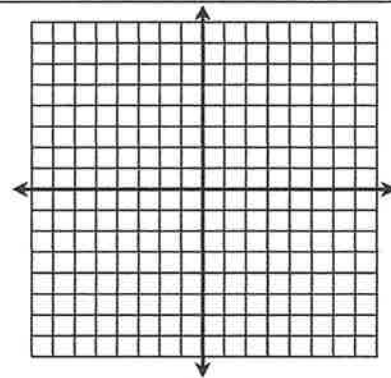
6. $y = x + 7$

x	y
-8	
-5	
1	
4	



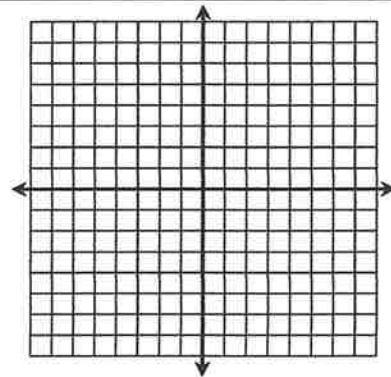
7. $y = -x$

x	y
-6	
-1	
2	
5	



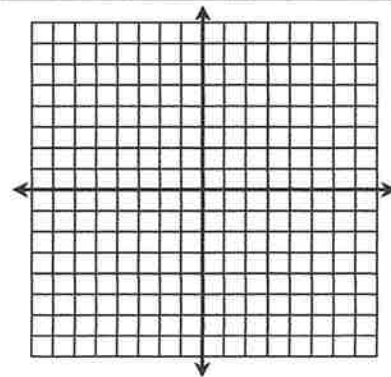
8. $y = -3x + 1$

x	y
-1	
0	
1	
2	



9. $y = -\frac{3}{4}x + 5$

x	y
-4	
0	
4	
8	



Name: _____

Math 7 Review: Packet #5

Topic #1: Angle Relationships

Using the diagram below, classify the angle pair as vertical, adjacent, complementary, supplementary, or congruent angles. Use all names that apply.

<p>1.</p>	a) $\angle 1$ and $\angle 2$	b) $\angle 1$ and $\angle 3$
	c) $\angle 3$ and $\angle 4$	d) $\angle 1$ and $\angle 4$

2. $\angle P$ and $\angle Q$ are supplementary angles.
If $m\angle Q = 72^\circ$, find $m\angle P$.

3. $\angle R$ and $\angle S$ are complementary angles.
If $m\angle R = 14^\circ$, find $m\angle S$.

Find each measure.

<p>4.</p>	<p>5.</p>	<p>6.</p>
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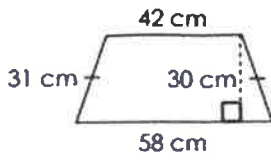
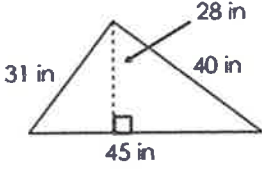
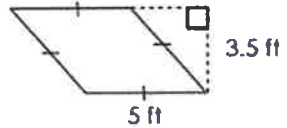
Find the value of x .

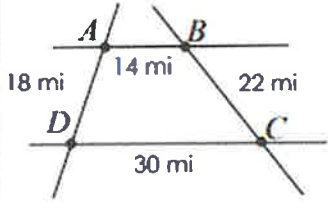
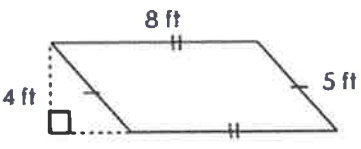
<p>7.</p>	<p>8.</p>	<p>9.</p>
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Topic #2: Triangles



<p>10. Find the value of x.</p>	<p>11. Find the value of x.</p>	<p>12. Find $m\angle QUR$.</p>
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Topic #5: Area and Perimeter of Plane Figures

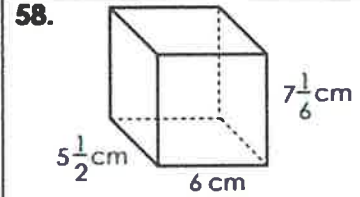
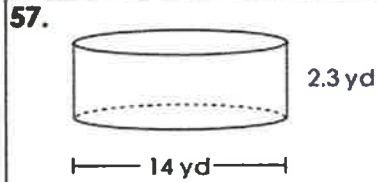
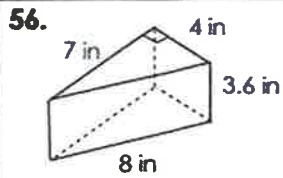
Find the perimeter and area of each figure.					
38. 		39. 		40. 	
Perimeter	Area	Perimeter	Area	Perimeter	Area

41. Anne is a bus driver and drives the route from points <i>A</i> to <i>B</i> to <i>C</i> to <i>D</i> and back to <i>A</i> again six times a day. How many miles does she drive each day? 	42. Chris is covering a window with a decorative adhesive film to filter light. The film costs \$2.35 per square foot. How much will the film cost? 
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Topic #6: Circumference and Area of Circles

Find the circumference and area of each figure.			
43. 		44. 	
Circumference	Area	Circumference	Area

Find the volume of each figure. Use 3.14 for pi when necessary.

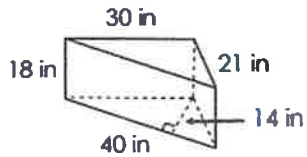


Volume:

Volume:

Volume:

59. Manuel just bought a corner aquarium. He purifies the water by using 3 drops of a conditioning product for every 48 cubic inches of water. How many drops will he need?



60. The Avery family just had an above ground pool installed. The pool is 6 feet deep and has a diameter of 22 feet. If the cost to fill the pool is \$6.25 per 100 cubic feet, find the total spent to fill it to the top.

Topic #5: Measures of Central Tendency

Find the mean, median, mode(s), and range for each of the following data sets. Round to the nearest tenth if necessary.

14. The ages of children in a summer art program are listed below.
 {8, 7, 8, 12, 13, 9, 10, 11, 12, 7, 8, 10, 12, 9, 9, 11}

15. The table shows the number of each type of pizza sold at Pat's Pizzeria yesterday.

Type	Number Sold
Pepperoni	74
Cheese	130
Sausage	80
Veggie	34
Hawaiian	12
Meat Lovers	60
White	10

Mean	Median	Mode(s)	Range	Mean	Median	Mode(s)	Range

Topic #6: Stem-and-Leaf Plots

16. The stem-and-leaf plot shows the age, in years, of passengers on an airplane.

Passenger Ages

Stem	Leaf
0	1 2 4 5
1	6 8 9
2	0 2 3 7
3	3 5 8 8
4	0 2 4
5	

Key: 0 | 1 = 1 year old

a) Find the mean, median, mode and range.

Mean: _____

Median: _____

Mode(s): _____

Range: _____

b) How many passengers were over the age of 25?

c) How many passengers were no more than 30 years old?

d) How many passengers were between the ages of 20 and 40?

Topic #7: Histograms

17. The histogram below shows the heights of 30 palm trees measured on an island resort. Use the histogram to answer the questions.

Height (feet)	Frequency
1-20	3
21-40	10
41-60	9
61-80	7
81-100	1

a) How many trees are between 41 and 60 feet tall?

b) How many trees are at least 21 feet tall?

c) What percent of the trees are greater than 60 feet tall?

Topic #8: Box-and-Whisker Plots

Find the five-number summary and construct the box-and-whisker plot for each data set.

18. The height (in inches) of 15 children on a soccer team:
 {48, 45, 50, 55, 62, 60, 49, 51, 58, 59, 60, 54, 49, 60, 50}

Minimum: _____

Lower Quartile: _____

Median: _____

Upper Quartile: _____

Maximum: _____

19. The number of dozens of cupcakes sold at Sweetie's Bakery each day over a month is shown on the box-and-whisker plot to the right.

a) What is the interquartile range? _____

b) What percent of the days did they sell more than 7 dozen cupcakes? _____

c) What percent of the days did they sell between 10 and 14 dozen cupcakes? _____

d) What percent of days did they sell no more than 7 dozen cupcakes? _____

20. The waiting time at the emergency room of two different hospitals are shown below.

Waiting Room A

Waiting Room B

a) Which waiting room had a greater range in wait times?

b) What is the difference in the minimum wait time?

c) What is the difference in the median wait time?

d) Which group had the longest wait time overall? Explain.

Name: _____

Topic #1: Theoretical and Experimental Probability

1. A number from 0-9 is chosen at random 80 times. The results are shown in the table.

Result	0	1	2	3	4	5	6	7	8	9
Frequency	6	9	8	10	7	8	9	7	11	5

a) What is the theoretical probability of choosing the number 3?

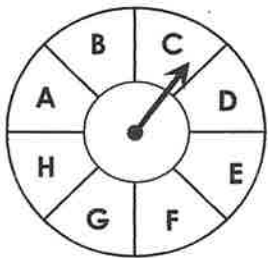
b) Based on the experiment, what is the probability of choosing the number 3? Compare this to the previous answer.

2. Theoretically, if a number is chosen 500 times, how many times would you expect a number greater than 5?

3. Based on this experiment, if a number is chosen 500 times, how many times would you expect a number greater than 5? Compare this to the previous answer.

Topic #2: Tree Diagrams & The Counting Principle

4. The spinner below is spun once and a coin is flipped. Draw a tree diagram to show all possible outcomes.



5. List the sample space:

6. What are the total number of outcomes?

Use the fundamental counting principle for questions 7-8.

7. A letter from the word **PERSONALITY** and a card from a standard deck are chosen at random. How many outcomes are possible?

8. Mark is getting a smoothie. He can choose from three sizes, nine fruit flavors and three different juices. How many smoothie outcomes are possible?

Topic #3: Compound Probability

<p>9. A letter from the word PENNSYLVANIA is chosen at random, then a standard die is rolled. Find each probability.</p>		
<p>a) $P(L, \text{ then odd})$</p>	<p>b) $P(N, \text{ then less than } 4)$</p>	<p>a) $P(\text{a vowel, then at least } 3)$</p>
<p>10. There are 8 red, 12 blue, 10 yellow, and 6 green marbles in a bag. A marble is chosen at random, replaced, then another is chosen. Find each probability.</p>		
<p>a) $P(\text{red, then green})$</p>	<p>b) $P(\text{not red, then blue})$</p>	<p>c) $P(\text{both yellow})$</p>

Topic #4: Using Samples to Predict

<p>11. A health center in a small town wants to survey people about their exercise habits. Determine whether the samples below would be biased or unbiased. Explain.</p>													
<p>a) 75 random people at the gym</p>	<p>b) calling every 20th person listed in the town directory</p>												
<p>c) 200 people seated in a movie theater</p>													
<p>12. A school surveyed a random group of students to determine their favorite school lunch. Results are shown below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Result</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Pizza</td> <td>15</td> </tr> <tr> <td>Burgers</td> <td>25</td> </tr> <tr> <td>Hot dogs</td> <td>12</td> </tr> <tr> <td>Sandwiches</td> <td>20</td> </tr> <tr> <td>Salad</td> <td>8</td> </tr> </tbody> </table>	Result	Frequency	Pizza	15	Burgers	25	Hot dogs	12	Sandwiches	20	Salad	8	<p>a) What percent of the students reported pizza as their favorite?</p>
	Result	Frequency											
	Pizza	15											
Burgers	25												
Hot dogs	12												
Sandwiches	20												
Salad	8												
<p>b) What percent of the students reported burgers or sandwiches as their favorite?</p>													
<p>c) Out of 200 students, how many would you expect to say their favorite lunch is salad?</p>													
<p>13. A museum surveyed a random group of attendees to determine their favorite exhibit. Results are shown below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Result</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Sea Life</td> <td>10</td> </tr> <tr> <td>Ice Age</td> <td>20</td> </tr> <tr> <td>Dinosaurs</td> <td>22</td> </tr> <tr> <td>Reptiles</td> <td>18</td> </tr> </tbody> </table>	Result	Frequency	Sea Life	10	Ice Age	20	Dinosaurs	22	Reptiles	18	<p>a) What percent of the attendees reported the dinosaurs exhibit as their favorite?</p>		
	Result	Frequency											
	Sea Life	10											
Ice Age	20												
Dinosaurs	22												
Reptiles	18												
<p>b) What percent of the attendees reported anything other than sea life as their favorite?</p>													
<p>c) Out of 500 attendees, how many would you expect to say the reptile exhibit is their favorite?</p>													

16. $-5x + 8 = 53$	17. $\frac{w-9}{2} = -3$	18. $-9 = -8 + \frac{r}{21}$
19. $6(6 - 6a) = 108$	20. $3 - 7c + 3c = -17$	21. $214 = -3 + 7(-1 + 8s)$
22. $-2(1 + 2d) = 28 + d$	23. $-(1 + 4m) = 3(2 - m) + 4$	24. $7(k + 4) = -1 + 8(k + 2)$

Directions: Translate each equation. Do not solve.

25. "a number decreased by fourteen is six"	26. "the quotient of a number and negative two is five"
27. "the difference of twice a number and eight is ten"	28. "12 more than one-fourth of a number is 3"

Directions: For each problem, define a variable and set up an equation, then solve.

29. Vince has a dog washing business. He washed 8 dogs and earned a total of \$119.92. How much does he charge per dog?	30. Mel paid for three-fourths of the cost of a cake and Gretchen paid the rest. If Mel paid \$21, how much did Gretchen pay?
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Equation	Solution	Equation	Solution
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